How Can "Ten Minute Tasks" Change My Classroom?

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Goals

- Consider activities with multiple representations
- Learn how to use student representations and interpret student reasoning
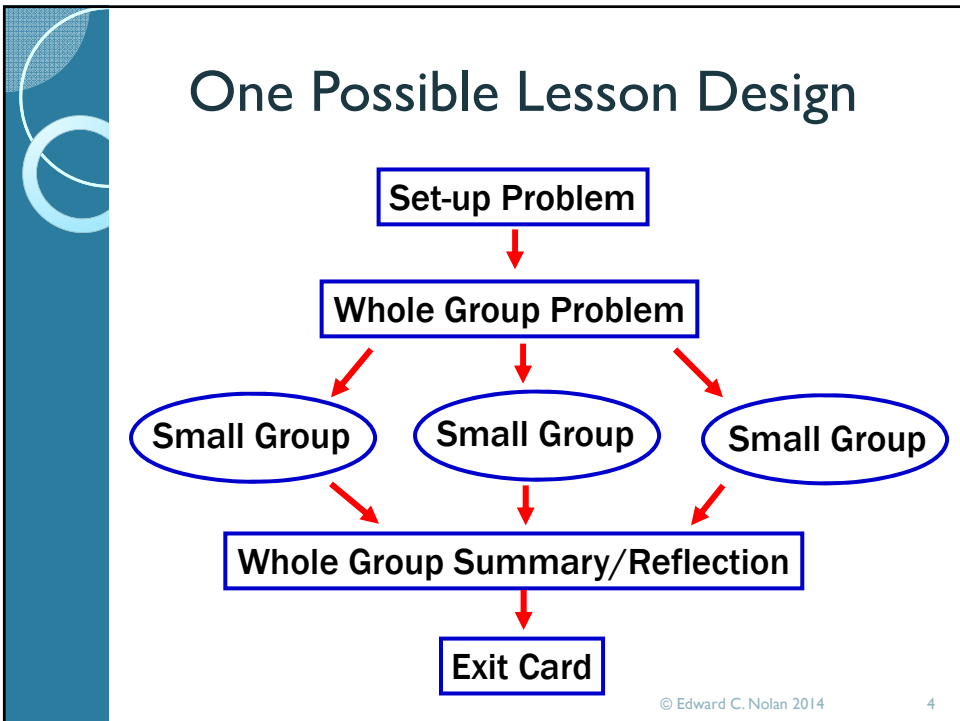- Determine the type of instruction that will be best suited for a particular type of learner

Generalizing

We need to assist our students in
fluently moving among representations:

Graphical

Verbal   **Geometric**
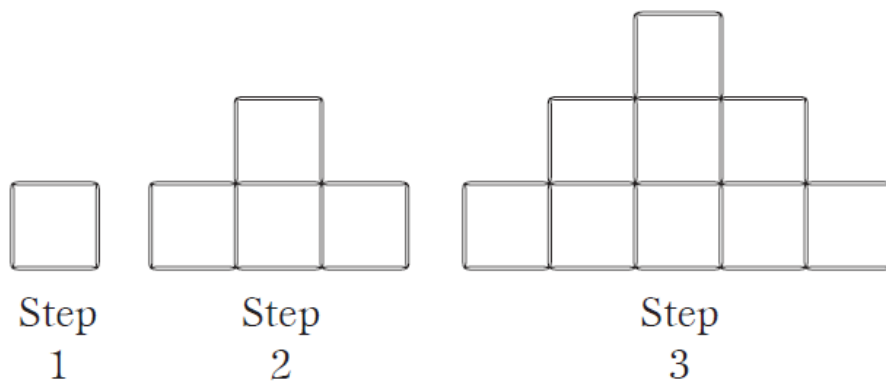
Concrete

Symbolic   **Numeric**

Algebraic

to generalize strategies
and solve problems.

One Possible Lesson Design

Set-up Problem

Whole Group Problem

Small Group   **Small Group**   **Small Group**

Whole Group Summary/Reflection

Exit Card

Setting the Stage

In the figure, as the step changes, _____ also changes.

Step
1

Step
2

Step
3

Peterson, Blake E. "Linear and Quadratic Change: A Problem from Japan," *Mathematics Teacher*, NCTM: Reston, VA, October 2006. Pages 206-212.
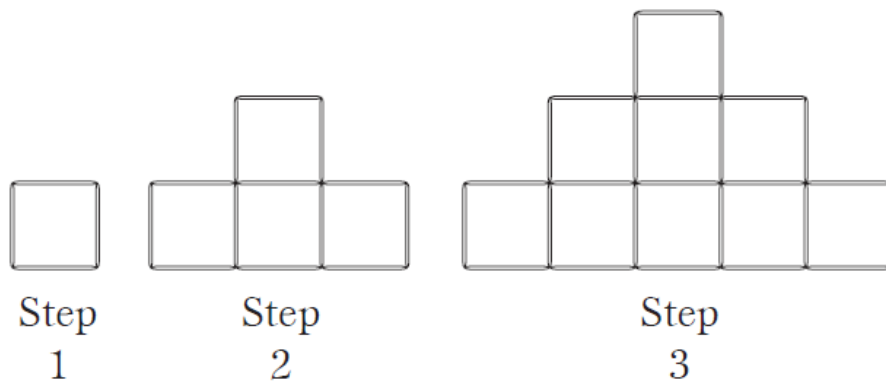
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Peterson, Blake E. "Linear and Quadratic Change: A Problem from Japan," *Mathematics Teacher*, NCTM: Reston, VA, October 2006. Pages 206-212.

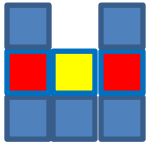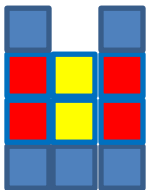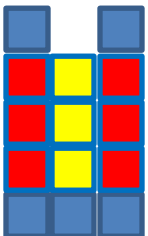# Perimeter Piles

Pile 1	Pile 2	Pile 3	Pile 4	Pile 5

1. Construct and sketch pile 4 and pile 5.

2. Use words to describe pile 4 and pile 5 _____

   _____

   _____

3. Use words to describe how pile 100 would look. Be specific. _____

   _____

   _____

4. Describe pile 0. _____

   _____

   _____

5. Fill in the table.

Pile Number	Perimeter	Area
1		
2		
3		

6. Find the rule to determine the perimeter and the area of each pile.

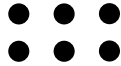Adapted from: *Strength in numbers: Collaborative learning in secondary mathematics* from NCTM.

Patterns of Dots

A pattern of dots is shown below. At each step, more dots are added to the pattern. The number of dots added at each step is more than the number added in the previous step. The pattern continues indefinitely.
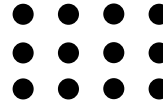
Step 1   Step 2   Step 3

How do you determine the number of dots in Step 20, but not have to draw all 20 pictures and then count the dots?
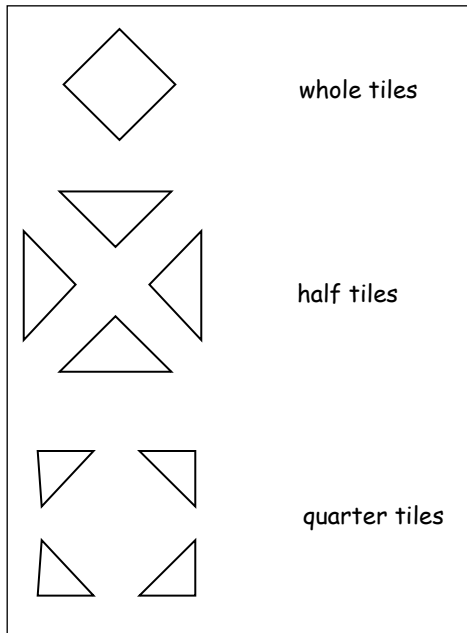
Explain or show how you could do this <u>and</u> give the answer that you get for the number of dots.

Table Tiles

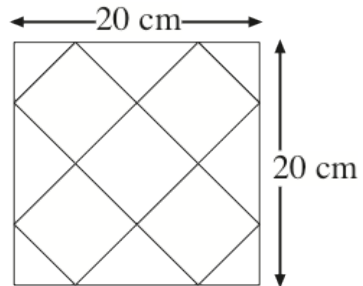Maria makes tables with square tops. She sticks tiles to the top of each table.

Maria uses three types of tiles:

The sizes of the square tabletops are all multiples of 10 cm.

Maria only uses quarter tiles in the corners and half tiles along the edges of the table.

Here is one tabletop:

whole tiles

half tiles

quarter tiles

This square tabletop uses:
5 whole tiles, 4 half tiles, 4 quarter tiles.

1. How many tiles of each type will she need for a 40 cm by 40 cm square?

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2. Describe a method for calculating how many tiles of each type Maria needs for larger square tabletops.